

WHAT IS CLAIMED IS:

1           1. An optical scanner for deflecting a plurality of light beams at a given  
2 wavelength  $\lambda$  from a light source towards a surface to be scanned, said scanner  
3 including at least one optical element having a surface which reflects said light  
4 beams, said surface comprising a thin film in which the reflectance of s-  
5 polarized light at said given wavelength and p-polarized light at said given  
6 wavelength differ by no more than 3.0% over an incidence angle in the range of  
7 0-60°.

1           2. The optical scanner of claim 1 wherein said difference is no greater  
2 than 1.9%.

1           3. The optical scanner of claim 2 wherein said thin film comprises a  
2 first, outermost layer of  $\text{SiO}_2$ , a second layer of  $\text{TiO}_2$ , and a third layer of  $\text{SiO}_2$ ,  
3 and wherein the reflectance of said second layer is higher than the reflectance  
4 of each of said first and third layers.

1           4. The optical scanner of claim 1 wherein said difference is no greater  
2 than 0.16%.

1           5. The optical scanner of claim 4 wherein said thin film comprises a  
2 layer of  $\text{MgF}_2$  having a thickness less than  $0.25 \lambda$ .

1           6. The optical scanner of claim 5 wherein said thickness is about  
2  $0.22 \lambda$ .

1           7. An optical scanner for deflecting a plurality of light beams at a give  
2 wavelength  $\lambda$  from a light source towards a surface to be scanned, said scanner  
3 including at least one optical element having a surface through which said light  
4 beams are transmitted, said surface comprising a thin film in which the  
5 refelctance of s-polarized light at said given wavelength and p-polarized light at

6 said given wavelength differ by no more than 3.0% over an incidence angle in  
7 the range of 0-60°.

1 8. The optical scanner of claim 7 wherein said difference is no greater  
2 than 0.19%.

1 9. The optical scanner of claim 8 wherein said thin film comprises a  
2 first, outermost layer of  $\text{MgF}_2$ , a second layer of  $\text{ZrO}_2$ , and a third layer of  $\text{Al}_2\text{O}_3$ .

1 10. The optical scanner of claim 9 wherein the reflectance of said  
2 second layer is greater than the reflectance of each of said first and third layers.

1 11. The optical scanner of claim 9 wherein said second layer has a  
2 thickness less than  $0.50 \lambda$ .

1 12. The optical scanner of claim 11 wherein said thickness is about  
2  $0.45 \lambda$ .

1 13. An optical scanner comprising:  
2 a light source for emitting a plurality of light beams in which a  
3 polarization direction of at least one of the light beams is different from  
4 polarization directions of the other light beams;  
5 a deflector for deflecting the plurality of the light beams emitted from the  
6 light source to scan the light beams over a surface to be scanned; and  
7 an optical surface provided between the light source and said surface to  
8 be scanned in the optical paths of the light beams, the optical surface having a  
9 reflectance for s-polarized light and a reflectance for p-polarized light that are  
10 substantially the same at a predetermined incident angle to the optical surface.

1 14. The optical scanner of claim 13, wherein said optical surface is  
2 provided on a reflection-type optical element.

1 15. The optical scanner of claim 14, wherein said optical surface is  
2 provided on a polygon mirror.

1 16. The optical scanner of claim 14, wherein said optical surface is  
2 provided on a mirror located between the light source and the deflector.

1 17. The optical scanner of claim 14, wherein said optical surface is  
2 provided on an imaging mirror.

1 18. The optical scanner of claim 13, wherein said optical surface is  
2 provided on a transmission-type optical element.

1 19. The optical scanner of claim 18, wherein said optical surface is  
2 provided on a imaging lens.

1 20. The optical scanner of claim 18, wherein said optical surface is  
2 provided on a glass window.

1 21. The optical scanner of claim 18, wherein said optical surface is  
2 provided on a collimator lens.

1 22. The optical scanner of claim 18, wherein said optical surface is  
2 provided on a cylindrical lens.

1 23. The optical scanner of claim 13, wherein the difference between the  
2 reflectance for s-polarized light and the reflectance for p-polarized light is not  
3 more than 3%.